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10 20 30 40
GACCAATCGGAGTGTGGTGAATTTTTGGAAAATATTTTGTGCGGTTCC
50 60 70 80 90
TTTAGTTGTGTAATATAGTACTTTAGTTACAAATTTGGAATAATTTGG
100 110 120 130 140
CAGCAAAACCATCTGCAGCAACAAAATCATCTGCAGCTGCGAAATCAT
150 160 170 180 190
CTGCAGCAGCAAAAGCATCTTCAGGAGCGAGAAAAGCCCCAAATAATG
200 210 220
TGAG ATG GCA GTT GAC GTC CGA ATC GCT GCC TTC
Met Ala Val Asp Val Arg Ile Ala Ala Phe
230 240 250 260
CTG CTG GTG TTT ATA GCG CCT GCA GTT TTA GCT CAA
Leu Leu Val Phe Ile Ala Pro Ala Val Leu Ala Gln
270 280 290
GAG AGA TGT GGG TAT ATG ACC GCC ATC CCA AGG CTA
Glu Arg Cys Gly Tyr Met Thr Ala Ile Pro Arg Leu
300 310 320 330
CCA CGA CCG GAT AAT TTG CCA GTA CTA AAT TTT GAA
Pro Arg Pro Asp Asn Leu Pro Val Leu Asn Phe Glu
340 350 360 370
GGC CAG ACA TGG AGT CAG AGG CCC CTG CTC CCC GCC
Gly Gln Thr Trp Ser Gln Arg Pro Leu Leu Pro Ala
380 390 400
CCG GAG CGG GAT GAC CTG TGC ATG GAC GCC TAC CAC
Pro Glu Arg Asp Asp Leu Cys Met Asp Ala Tyr His
410 420 430 440
GTG ATA ACA GCC AAC CTC GGC ACG CAG GTC ATC TAC
Val Ile Thr Ala Asn Leu Gly Thr Gln Val Ile Tyr
450 460 470
ATG GAT GAA GAG ATA GAA GAC GAA ATC ACC ATC GCC
Met Asp Glu Glu Ile Glu Asp Glu Ile Thr Ile Ala
480 490 500 510
ATA CTT AAT TAT AAC GGA CCA TCA ACT CCG TTC ATT
Ile Leu Asn Tyr Asn Gly Pro Ser Thr Pro Phe Ile

FIG. 1A

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520	530	540	550
GAA CTG CCA TTT	TTA TCC GGT	TCG TAC AAT	CTG CTG
Glu Leu Pro Phe	Leu Ser Gly	Ser Tyr Asn	Leu Leu
560	570	580	
ATG CCG GTC ATC	AGG AGA GTT	GAC AAC GGG	GAG TGG
Met Pro Val Ile	Arg Arg Val	Asp Asn Gly	Glu Trp
590	600	610	620
CAT CTC ATC ATC	ACG CAA AGA	CAG CAT TAC	GAG TTG
His Leu Ile Ile	Thr Gln Arg	Gln His Tyr	Glu Leu
630	640	650	
CCC GGC ATG CAG	CAG TAC ATG	TTC AAT GTG	CGC GTG
Pro Gly Met Gln	Gln Tyr Met	Phe Asn Val	Arg Val
660	670	680	690
GAC GGC CAG TCG	CTG GTG GCA	GGC GTG TCT	CTC GCT
Asp Gly Gln Ser	Leu Val Ala	Gly Val Ser	Leu Ala
700	710	720	730
ATC GTC AAC ATA	GAT GAC AAC	GCG CCC ATC	ATA CAA
Ile Val Asn Ile	Asp Asp Asn	Ala Pro Ile	Ile Gln
740	750	760	
AAC TTC GAG CCT	TGC CGG GTT	CCT GAA CTG	GGC GAG
Asn Phe Glu Pro	Cys Arg Val	Pro Glu Leu	Gly Glu
770	780	790	800
CCA GGG TTG ACA	GAA TGC ACA	TAC CAA GTA	TCG GAC
Pro Gly Leu Thr	Glu Cys Thr	Tyr Gln Val	Ser Asp
810	820	830	
GCG GAC GGA CGG	ATC AGC ACA	GAG TTC ATG	ACG TTC
Ala Asp Gly Arg	Ile Ser Thr	Glu Phe Met	Thr Phe
840	850	860	870
AGG ATC GAC AGC	GTT CGT GGC	GAC GAG GAG	ACC TTC
Arg Ile Asp Ser	Val Arg Gly	Asp Glu Glu	Thr Phe
880	890	900	910
TAC ATC GAA CGG	ACG AAT ATC	CCC AAC CAA	TGG ATG
Tyr Ile Glu Arg	Thr Asn Ile	Pro Asn Gln	Trp Met
920	930	940	
TGG CTA AAT ATG	ACC ATA GGC	GTT AAT ACC	TCG CTC
Trp Leu Asn Met	Thr Ile Gly	Val Asn Thr	Ser Leu

FIG. 1B

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950	960	970	980
AAC TTC GTC ACC AGT CCG CTG CAT ATA TTC AGC GTG			
Asn Phe Val Thr Ser Pro Leu His Ile Phe Ser Val			
990	1000	1010	
ACA GCC CTG GAC TCG CTC CCG AAC ACC CAC ACG GTG			
Thr Ala Leu Asp Ser Leu Pro Asn Thr His Thr Val			
1020	1030	1040	1050
ACT ATG ATG GTG CAA GTG GCG AAT GTG AAC AGC			
Thr Met Met Val Gln Val Ala Asn Val Asn Ser			
1060	1070	1080	
CGT CCG CCG CGC TGG CTG GAG ATC TTC GCT GTC CAA			
Arg Pro Pro Arg Trp Leu Glu Ile Phe Ala Val Gln			
1090	1100	1110	1120
CAG TTT GAA GAG AAA TCT TAC CAA AAC TTC ACA			
Gln Phe Glu Glu Lys Ser Tyr Gln Asn Phe Thr			
1130	1140	1150	
GTG AGG GCG ATC GAC GGA GAC ACT GAG ATC AAT ATG			
Val Arg Ala Ile Asp Gly Asp Thr Glu Ile Asn Met			
1160	1170	1180	1190
CCT ATC AAC TAC AGG CTG ATC ACA AAT GAG GAA GAC			
Pro Ile Asn Tyr Arg Leu Ile Thr Asn Glu Glu Asp			
1200	1210	1220	
ACA TTC TTC AGC ATT GAG GCC CTG CCT GGT GGA AAA			
Thr Phe Phe Ser Ile Glu Ala Leu Pro Gly Gly Lys			
1230	1240	1250	1260
AGC GGG GCT GTA TTC CTC GTG TCG CCA ATT GAC			
Ser Gly Ala Val Phe Leu Val Ser Pro Ile Asp			
1270	1280	1290	
CGC GAC ACA CTG CAA CGA GAG GTG TTT CCA CTT ACG			
Arg Asp Thr Leu Gln Arg Glu Val Phe Pro Leu Thr			
1300	1310	1320	1330
ATC GTC GCT TAC AAA TAT GAT GAG GAG GCC TTC TCC			
Ile Val Ala Tyr Lys Tyr Asp Glu Glu Ala Phe Ser			
1340	1350	1360	
ACA TCA ACA AAC GTG GTC ATC ATT GTG ACA GAC ATC			
Thr Ser Thr Asn Val Val Ile Ile Val Thr Asp Ile			

FIG. 1C

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1370	1380	1390	1400
AAC GAC CAA AGA CCT GAA CCT ATA CAC AAG GAA			
Asn Asp Gln Arg Pro Glu Pro Ile His Lys Glu			
1410	1420	1430	
TAT CGA CTG GCA ATC ATG GAG GAG ACG CCC CTG ACC			
Tyr Arg Leu Ala Ile Met Glu Glu Thr Pro Leu Thr			
1440	1450	1460	1470
CTC AAC TTC GAT AAA GAA TTC GGA TTT CAT GAT			
Leu Asn Phe Asp Lys Glu Phe Gly Phe His Asp			
1480	1490	1500	
AAG GAT TTA GGT CAA AAC GCT CAG TAC ACG GTG CGT			
Lys Asp Leu Gly Gln Asn Ala Gln Tyr Thr Val Arg			
1510	1520	1530	1540
CTA GAG AGC GTG GAC CCT CCA GGC GCT GCT GAG GCA			
Leu Glu Ser Val Asp Pro Pro Gly Ala Ala Glu Ala			
1550	1560	1570	
TTC TAC ATA GCG CCT GAA GTC GGC TAC CAG CGA CAG			
Phe Tyr Ile Ala Pro Glu Val Gly Tyr Gln Arg Gln			
1580	1590	1600	1610
ACC TTC ATC ATG GGC ACC CTC AAT CAC TCC ATG			
Thr Phe Ile Met Gly Thr Leu Asn His Ser Met			
1620	1630	1640	
CTG GAT TAC GAA GTG CCA GAG TTT CAG AGT ATT ACG			
Leu Asp Tyr Glu Val Pro Glu Phe Gln Ser Ile Thr			
1650	1660	1670	1680
ATT CGG GTG GTA GCG ACC GAC AAC AAC GAC ACG			
Ile Arg Val Val Ala Thr Asp Asn Asn Asp Thr			
1690	1700	1710	
AGG CAC GTG GGC GTC GCG TTG GTT CAC ATT GAC CTC			
Arg His Val Gly Val Ala Leu Val His Ile Asp Leu			
1720	1730	1740	1750
ATC AAT TGG AAC GAT GAG CAG CCG ATC TTC GAA CAC			
Ile Asn Trp Asn Asp Glu Gln Pro Ile Phe Glu His			
1760	1770	1780	
GCC GTG CAG ACC GTC ACC TTC GAC GAG ACT GAA GGC			
Ala Val Gln Thr Val Thr Phe Asp Glu Thr Glu Gly			

FIG. 1D

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1790	1800	1810	1820
GAG GGG TTC TTC GTC GCC AAG GCG GTT GCA CAC			
Glu Gly Phe Phe Val Ala Lys Ala Val Ala His			
1830	1840	1850	
GAC AGA GAC ATC GGG GAT GTC GTC GAG CAT ACT TTA			
Asp Arg Asp Ile Gly Asp Val Val Glu His Thr Leu			
1860	1870	1880	1890
TTG GGT AAC GCT GTT AAC TTC CTG ACC ATC GAC			
Leu Gly Asn Ala Val Asn Phe Leu Thr Ile Asp			
1900	1910	1920	
AAA CTC ACC GGC GAC ATC CGC GTC TCA GCT AAC GAC			
Lys Leu Thr Gly Asp Ile Arg Val Ser Ala Asn Asp			
1930	1940	1950	1960
TCC TTC AAC TAC CAT CGA GAA AGT GAA TTA TTT GTG			
Ser Phe Asn Tyr His Arg Glu Ser Glu Leu Phe Val			
1970	1980	1990	
CAG GTG CGA GCT ACA GAC ACG CTG GGC GAA CCC TTC			
Gln Val Arg Ala Thr Asp Thr Leu Gly Glu Pro Phe			
2000	2010	2020	2030
CAC ACG GCG ACG TCA CAG CTG GTC ATA CGA CTA			
His Thr Ala Thr Ser Gln Leu Val Ile Arg Leu			
2040	2050	2060	
AAT GAC ATC AAC AAC ACG CCA CCC ACC TTA CGG CTG			
Asn Asp Ile Asn Asn Thr Pro Pro Thr Leu Arg Leu			
2070	2080	2090	2100
CCT CGA GGC AGT CCC CAA GTG GAG GAG AAC GTG			
Pro Arg Gly Ser Pro Gln Val Glu Glu Asn Val			
2110	2120	2130	
CCT GAT GGC CAC GTC ATC ACC CAG GAG TTA CGC GCC			
Pro Asp Gly His Val Ile Thr Gln Glu Leu Arg Ala			
2140	2150	2160	2170
ACC GAC CCC GAC ACC ACG GCC GAT CTG CGC TTC GAG			
Thr Asp Pro Asp Thr Thr Ala Asp Leu Arg Phe Glu			
2180	2190	2200	
ATA AAC TGG GAC ACC TCT TTC GCC ACC AAG CAA GGC			
Ile Asn Trp Asp Thr Ser Phe Ala Thr Lys Gln Gly			

FIG. 1E

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2210	2220	2230	2240
CGC CAG GCT AAC CCC GAC GAG TTT AGG AAT TGC			
Arg Gln Ala Asn Pro Asp Glu Phe Arg Asn Cys			
2250	2260	2270	
GTG GAA ATC GAG ACC ATC TTC CCC GAG ATT AAC AAC			
Val Glu Ile Glu Thr Ile Phe Pro Glu Ile Asn Asn			
2280	2290	2300	2310
CGG GGA CTG GCT ATC GGC CGC GTT GTA GCG CGC			
Arg Gly Leu Ala Ile Gly Arg Val Val Ala Arg			
2320	2330	2340	
GAA ATC AGA CAC AAC GTG ACC ATA GAC TAC GAG GAG			
Glu Ile Arg His Asn Val Thr Ile Asp Tyr Glu Glu			
2350	2360	2370	2380
TTT GAG GTC CTC TCC CTC ACA GTG AGG GTG CGT GAC			
Phe Glu Val Leu Ser Leu Thr Val Arg Val Arg Asp			
2390	2400	2410	
CTT AAC ACC GTC TAC GGA GAC GAC TAC GAC GAA TCG			
Leu Asn Thr Val Tyr Gly Asp Asp Tyr Asp Glu Ser			
2420	2430	2440	2450
ATG CTC ACA ATA ACT ATA ATC GAT ATG AAC GAC			
Met Leu Thr Ile Thr Ile Ile Asp Met Asn Asp			
2460	2470	2480	
AAC GCG CCG GTG TGG GTG GAG GGG ACT CTG GAG CAG			
Asn Ala Pro Val Trp Val Glu Gly Thr Leu Glu Gln			
2490	2500	2510	2520
AAC TTC CGA GTC CGC GAG ATG TCG GCG GGC GGG			
Asn Phe Arg Val Arg Glu Met Ser Ala Gly Gly			
2530	2540	2550	
CTC GTG GTG GGC TCC GTG CGC GCG GAC GAC ATC GAC			
Leu Val Val Gly Ser Val Arg Ala Asp Asp Ile Asp			
2560	2570	2580	2590
GGA CCG CTC TAC AAC CAA GTG CGA TAC ACC ATT TTC			
Gly Pro Leu Tyr Asn Gln Val Arg Tyr Thr Ile Phe			
2600	2610	2620	
CCT CGT GAA GAC ACA GAT AAG GAC CTG ATA ATG ATC			
Pro Arg Glu Asp Thr Asp Lys Asp Leu Ile Met Ile			

FIG. 1F

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2630	2640	2650	2660
GAC TTC CTC ACG GGT CAA ATT TCC GTG AAC ACA			
Asp Phe Leu Thr Gly Gln Ile Ser Val Asn Thr			
2670	2680	2690	
AGC GGC GCC ATC GAC GCG GAT ACT CCT CCA CGC TTC			
Ser Gly Ala Ile Asp Ala Asp Thr Pro Pro Arg Phe			
2700	2710	2720	2730
CAC CTC TAC TAT ACA GTG GTC GCT AGT GAC CGA			
His Leu Tyr Tyr Thr Val Val Ala Ser Asp Arg			
2740	2750	2760	
TGC TCG ACA GAA GAT CCT GCA GAT TGC CCC CCT GAC			
Cys Ser Thr Glu Asp Pro Ala Asp Cys Pro Pro Asp			
2770	2780	2790	2800
CCG ACT TAT TGG GAA ACC GAA GGA AAT ATC ACA ATC			
Pro Thr Tyr Trp Glu Thr Glu Gly Asn Ile Thr Ile			
2810	2820	2830	
CAC ATC ACC GAC ACG AAC AAC AAG GTC CCG CAG GCG			
His Ile Thr Asp Thr Asn Asn Lys Val Pro Gln Ala			
2840	2850	2860	2870
GAA ACG ACT AAG TTC GAT ACC GTC GTG TAT ATT			
Glu Thr Thr Lys Phe Asp Thr Val Val Tyr Ile			
2880	2890	2900	
TAC GAG AAC GCA ACC CAC TTA GAC GAG GTG GTC ACT			
Tyr Glu Asn Ala Thr His Leu Asp Glu Val Val Thr			
2910	2920	2930	2940
CTG ATA GCC AGT GAT CTT GAC AGA GAC GAA ATA			
Leu Ile Ala Ser Asp Leu Asp Arg Asp Glu Ile			
2950	2960	2970	
TAC CAC ACG GTG AGC TAC GTC ATC AAT TAT GCA GTG			
Tyr His Thr Val Ser Tyr Val Ile Asn Tyr Ala Val			
2980	2990	3000	3010
AAC CCT CGA CTG ATG AAC TTC TTC TCC GTG AAC CGA			
Asn Pro Arg Leu Met Asn Phe Phe Ser Val Asn Arg			
3020	3030	3040	
GAG ACC GGC CTG GTG TAC GTG GAC TAT GAG ACC CAG			
Glu Thr Gly Leu Val Tyr Val Asp Tyr Glu Thr Gln			

FIG. 1G

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3050 3060 3070 3080
GGT AGT GGC GAG GTG CTG GAC CGT GAT GGT GAT
Gly Ser Gly Glu Val Leu Asp Arg Asp Gly Asp
3090 3100 3110
GAA CCA ACG CAC CGT ATC TTC TTC AAC CTC ATC GAC
Glu Pro Thr His Arg Ile Phe Phe Asn Leu Ile Asp
3120 3130 3140 3150
AAC TTC ATG GGG GAA GGA GAA GGT AAC AGA AAT
Asn Phe Met Gly Glu Gly Glu Gly Asn Arg Asn
3160 3170 3180
CAG AAC GAC ACA GAA GTT CTC GTT ATC TTG TTG GAT
Gln Asn Asp Thr Glu Val Leu Val Ile Leu Leu Asp
3190 3200 3210 3220
GTG AAT GAC AAT GCT CCT GAA TTG CCA CCG CCG AGC
Val Asn Asp Asn Ala Pro Glu Leu Pro Pro Pro Ser
3230 3240 3250
GAA CTC TCT TGG ACT ATA TCT GAG AAC CTT AAG CAG
Glu Leu Ser Trp Thr Ile Ser Glu Asn Leu Lys Gln
3260 3270 3280 3290
GGC GTC CGT CTT GAA CCA CAT ATC TTC GCC CCG
Gly Val Arg Leu Glu Pro His Ile Phe Ala Pro
3300 3310 3320
GAC CGC GAC GAG CCC GAC ACA GAC AAC TCC AGG GTC
Asp Arg Asp Glu Pro Asp Thr Asp Asn Ser Arg Val
3330 3340 3350 3360
GGC TAC GAG ATC CTG AAC CTC AGC ACG GAG CGG
Gly Tyr Glu Ile Leu Asn Leu Ser Thr Glu Arg
3370 3380 3390
GAC ATC GAA GTG CCG GAG CTG TTT GTG ATG ATA CAG
Asp Ile Glu Val Pro Glu Leu Phe Val Met Ile Gln
3400 3410 3420 3430
ATC GCG AAC GTC ACG GGA GAG CTG GAG ACC GCC ATG
Ile Ala Asn Val Thr Gly Glu Leu Glu Thr Ala Met
3440 3450 3460
GAC CTC AAG GGA TAT TGG GGG ACG TAC GCT ATA CAT
Asp Leu Lys Gly Tyr Trp Gly Thr Tyr Ala Ile His

FIG. 1H

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3470 3480 3490 3500
ATA CGG GCA TTC GAC CAC GGC ATT CCG CAA ATG
Ile Arg Ala Phe Asp His Gly Ile Pro Gln Met
3510 3520 3530
TCC ATG AAC GAG ACA TAT GAG CTG ATC ATC CAT CCG
Ser Met Asn Glu Thr Tyr Glu Leu Ile Ile His Pro
3540 3550 3560 3570
TTC AAC TAC TAC GCG CCT GAG TTC GTC TTC CCG
Phe Asn Tyr Tyr Ala Pro Glu Phe Val Phe Pro
3580 3590 3600
ACC AAC GAT GCC GTC ATA CGA CTT GCG AGG GAA CGA
Thr Asn Asp Ala Val Ile Arg Leu Ala Arg Glu Arg
3610 3620 3630 3640
GCT GTA ATC AAT GGA GTT CTA GCG ACA GTG AAC GGA
Ala Val Ile Asn Gly Val Leu Ala Thr Val Asn Gly
3650 3660 3670
GAG TTC TTG GAG CGG ATA TCG GCG ACT GAT CCG GAC
Glu Phe Leu Glu Arg Ile Ser Ala Thr Asp Pro Asp
3680 3690 3700 3710
GGA CTC CAC GCG GGC GTC GTC ACC TTC CAA GTG
Gly Leu His Ala Gly Val Val Thr Phe Gln Val
3720 3730 3740
GTA GGC GAT GAG GAA TCA CAA CGG TAC TTT CAA GTA
Val Gly Asp Glu Glu Ser Gln Arg Tyr Phe Gln Val
3750 3760 3770 3780
GTT AAC GAT GGC GAG AAC CTC GGC TCG TTG AGG
Val Asn Asp Gly Glu Asn Leu Gly Ser Leu Arg
3790 3800 3810
TTA CTG CAA GCC GTT CCA GAG GAG ATC AGG GAG TTC
Leu Leu Gln Ala Val Pro Glu Glu Ile Arg Glu Phe
3820 3830 3840 3850
CGG ATA ACG ATT CGC GCT ACA GAC CAG GGA ACG GAC
Arg Ile Thr Ile Arg Ala Thr Asp Gln Gly Thr Asp
3860 3870 3880
CCA GGA CCG CTG TCC ACG GAC ATG ACG TTC AGA GTT
Pro Gly Pro Leu Ser Thr Asp Met Thr Phe Arg Val

FIG. 11

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3890 3900 3910 3920
GTT TTT GTG CCC ACG CAA GGA GAA CCT AGA TTC
Val Phe Val Pro Thr Gln Gly Glu Pro Arg Phe
3930 3940 3950
GCG TCC TCA GAA CAT GCT GTC GCT TTC ATA GAA AAG
Ala Ser Ser Glu His Ala Val Ala Phe Ile Glu Lys
3960 3970 3980 3990
AGT GCC GGC ATG GAA GAG TCT CAC CAA CTT CCT
Ser Ala Gly Met Glu Glu Ser His Gln Leu Pro
4000 4010 4020
CTA GCA CAA GAC ATC AAG AAC CAT CTC TGT GAA GAC
Leu Ala Gln Asp Ile Lys Asn His Leu Cys Glu Asp
4030 4040 4050 4060
GAC TGT CAC AGC ATT TAC TAT CGT ATT ATC GAT GGC
Asp Cys His Ser Ile Tyr Tyr Arg Ile Ile Asp Gly
4070 4080 4090
AAC AGC GAA GGT CAT TTC GGC CTG GAT CCT GTT CGC
Asn Ser Glu Gly His Phe Gly Leu Asp Pro Val Arg
4100 4110 4120 4130
AAC AGG TTG TTC CTG AAG AAA GAG CTG ATA AGG
Asn Arg Leu Phe Leu Lys Lys Glu Leu Ile Arg
4140 4150 4160
GAA CAA AGT GCC TCC CAC ACT CTG CAA GTG GCG GCT
Glu Gln Ser Ala Ser His Thr Leu Gln Val Ala Ala
4170 4180 4190 4200
AGT AAC TCG CCC GAT GGT GGC ATT CCA CTT CCT
Ser Asn Ser Pro Asp Gly Gly Ile Pro Leu Pro
4210 4220 4230
GCT TCC ATC CTT ACT GTC ACT GTT ACC GTG AGG GAG
Ala Ser Ile Leu Thr Val Thr Val Thr Val Arg Glu
4240 4250 4260 4270
GCA GAC CCT CGT CCA GTG TTT GTG AGG GAA TTG TAC
Ala Asp Pro Arg Pro Val Phe Val Arg Glu Leu Tyr
4280 4290 4300
ACC GCA GGG ATA TCC ACA GCG GAC TCC ATC GGC AGA
Thr Ala Gly Ile Ser Thr Ala Asp Ser Ile Gly Arg

FIG. 1J

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4310	4320	4330	4340
GAG CTG CTC AGA TTA CAT GCG ACC CAG TCT GAA			
Glu Leu Leu Arg Leu His Ala Thr Gln Ser Glu			
4350	4360	4370	
GGC TCG GCC ATT ACT TAT GCT ATA GAC TAC GAT ACA			
Gly Ser Ala Ile Thr Tyr Ala Ile Asp Tyr Asp Thr			
4380	4390	4400	4410
ATG GTA GTG GAC CCC AGC CTG GAG GCA GTG AGA			
Met Val Val Asp Pro Ser Leu Glu Ala Val Arg			
4420	4430	4440	
CAG TCG GCT TTC GTA CTG AAC GCT CAA ACC GGA GTG			
Gln Ser Ala Phe Val Leu Asn Ala Gln Thr Gly Val			
4450	4460	4470	4480
CTG ACG CTT AAT ATC CAG CCC ACG GCC ACG ATG CAT			
Leu Thr Leu Asn Ile Gln Pro Thr Ala Thr Met His			
4490	4500	4510	
GGA CTG TTC AAA TTC GAA GTC ACA GCT ACT GAC ACG			
Gly Leu Phe Lys Phe Glu Val Thr Ala Thr Asp Thr			
4520	4530	4540	4550
GCC GGC GCT CAG GAC CGC ACC GAC GTC ACC GTG			
Ala Gly Ala Gln Asp Arg Thr Asp Val Thr Val			
4560	4570	4580	
TAC GTG GTA TCC TCG CAG AAC CGC GTC TAC TTC GTG			
Tyr Val Val Ser Ser Gln Asn Arg Val Tyr Phe Val			
4590	4600	4610	4620
TTC GTC AAC ACG CTG CAA CAG GTC GAA GAC AAC			
Phe Val Asn Thr Leu Gln Gln Val Glu Asp Asn			
4630	4640	4650	
AGA GAC TTT ATC GCG GAC ACC TTC AGC GCT GGG TTC			
Arg Asp Phe Ile Ala Asp Thr Phe Ser Ala Gly Phe			
4660	4670	4680	4690
AAC ATG ACC TGC AAC ATC GAC CAA GTG GTG CCC GCT			
Asn Met Thr Cys Asn Ile Asp Gln Val Val Pro Ala			
4700	4710	4720	
AAC GAC CCC GTC ACC GGC GTG GCG CTG GAG CAC AGC			
Asn Asp Pro Val Thr Gly Val Ala Leu Glu His Ser			

FIG. 1K

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4730	4740	4750	4760
ACG CAG ATG CGC GGC CAC TTC ATA CGG GAC AAC			
Thr Gln Met Arg Gly His Phe Ile Arg Asp Asn			
4770	4780	4790	
GTA CCC GTA CTC GCT GAT GAG ATA GAA CAG ATC CGT			
Val Pro Val Leu Ala Asp Glu Ile Glu Gln Ile Arg			
4800	4810	4820	4830
AGT GAC CTA GTC CTC CTG AGC TCG ATA CAA ACA			
Ser Asp Leu Val Leu Leu Ser Ser Ile Gln Thr			
4840	4850	4860	
ACG CTG GCG GCG CGA TCG CTG GTG TTG CAG GAC TTG			
Thr Leu Ala Ala Arg Ser Leu Val Leu Gln Asp Leu			
4870	4880	4890	4900
TTG ACC AAC TCC AGC CCG GAC TCG GCG CCT GAC TCG			
Leu Thr Asn Ser Ser Pro Asp Ser Ala Pro Asp Ser			
4910	4920	4930	
AGC CTC ACG GTG TAC GTG CTG GCC TCA CTG TCT GCT			
Ser Leu Thr Val Try Val Leu Ala Ser Leu Ser Ala			
4940	4950	4960	4970
GTG CTC GGT TTC ATG TGC CTT GTG CTA CTG CTT			
Val Leu Gly Phe Met Cys Leu Val Leu Leu Leu			
4980	4990	5000	
ACC TTC ATC ATC AGG ACT AGA GCG CTA AAC CGA CGG			
Thr Phe Ile Ile Arg Thr Arg Ala Leu Asn Arg Arg			
5010	5020	5030	5040
TTG GAA GCC CTG TCG ATG ACG AAG TAC GGC TCA			
Leu Glu Ala Leu Ser Met Thr Lys Tyr Gly Ser			
5050	5060	5070	
CTG GAC TCT GGA TTG AAC CGC GCC GGC ATC GCC GCC			
Leu Asp Ser Gly Leu Asn Arg Ala Gly Ile Ala Ala			
5080	5090	5100	5110
CCC GGC ACC AAC AAA CAC ACT GTG GAA GGC TCC AAC			
Pro Gly Thr Asn Lys His Thr Val Glu Gly Ser Asn			
5120	5130	5140	
CCT ATC TTC AAT GAA GCA ATA AAG ACG CCA GAT TTA			
Pro Ile Phe Asn Glu Ala Ile Lys Thr Pro Asp Leu			

FIG. 1L

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5150 5160 5170 5180
GAT GCC ATT AGC GAG GGT TCC AAC GAC TCT GAT
Asp Ala Ile Ser Glu Gly Ser Asn Asp Ser Asp
5190 5200 5210
CTG ATC GGC ATC GAA GAT CTT CCG CAC TTT GGC AAC
Leu Ile Gly Ile Glu Asp Leu Pro His Phe Gly Asn
5220 5230 5240 5250
GTC TTC ATG GAT CCT GAG GTG AAC GAA AAG GCA
Val Phe Met Asp Pro Glu Val Asn Glu Lys Ala
5260 5270 5280
AAT GGT TAT CCC GAA GTC GCA AAC CAC AAC AAC AAC
Asn Gly Tyr Pro Glu Val Ala Asn His Asn Asn Asn
5290 5300 5310 5320
TTC GCT TTC AAC CCG ACT CCC TTC TCG CCT GAG TTC
Phe Ala Phe Asn Pro Thr Pro Phe Ser Pro Glu Phe
5330 5340 5350 5360
GTT AAC GGA CAG TTC AGA AAG ATC TAGAAGATAACAACA
Val Asn Gly Gln Phe Arg Lys Ile
5370 5380 5390 5400 5410
CTAGTTAAGATCATTAAATTTTGGAGTTTGAATTAAGATTTTTTGAAAG
5420 5430 5440 5450
GATAGTTGTGATAAGCCTGTGATTTTTTAAACTGTAATTGAAAAAA
5460 5470 5480 5490 5500
AAAATTGAGACCTCCATTTAAGCTCTTGCTCTCATCTCATCAAATTTT
5510 5520 5530 5540 5550
ATAAAATGCCATTAGTCATTAAGATACTCGATTTAATTTAAGATTATT
5560 5570 5580
TAAGATATTATGTAAAATAAATATATTGTC

FIG. 1M

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SEQ ID NO. 2

Met	Ala	Val	Asp	Val	Arg	Ile	Ala	Ala	Phe	Leu	Leu
1				5					10		
Val	Phe	Ile	Ala	Pro	Ala	Val	Leu	Ala	Gln	Glu	Arg
	15						20				
Cys	Gly	Tyr	Met	Thr	Ala	Ile	Pro	Arg	Leu	Pro	Arg
25					30					35	
Pro	Asp	Asn	Leu	Pro	Val	Leu	Asn	Phe	Glu	Gly	Gln
		40						45			
Thr	Trp	Ser	Gln	Arg	Pro	Leu	Leu	Pro	Ala	Pro	Glu
	50					55					60

CAD1

Arg	Asp	Asp	Leu	Cys	Met	Asp	Ala	Tyr	His	Val	Ile
				65					70		
Thr	Ala	Asn	Leu	Gly	Thr	Gln	Val	Ile	Tyr	Met	Asp
	75						80				
Glu	Glu	Ile	Glu	Asp	Glu	Ile	Thr	Ile	Ala	Ile	Leu
85					90					95	
Asn	Tyr	Asn	Gly	Pro	Ser	Thr	Pro	Phe	Ile	Glu	Leu
			100					105			
Pro	Phe	Leu	Ser	Gly	Ser	Tyr	Asn	Leu	Leu	Met	Pro
	110					115					120
Val	Ile	Arg	Arg	Val	Asp	Asn	Gly	Glu	Trp	His	Leu
				125					130		
Ile	Ile	Thr	Gln	Arg	Gln	His	Tyr	Glu	Leu	Pro	Gly
		135					140				
Met	Gln	Gln	Tyr	Met	Phe	Asn	Val	Arg	Val	Asp	Gly
145					150					155	
Gln	Ser	Leu	Val	Ala	Gly	Val	Ser	Leu	Ala	Ile	Val
			160					165			
Asn	Ile	Asp	Asp	Asn	Ala	Pro	Ile	Ile	Gln	Asn	Phe
	170					175					180
Glu	Pro	Cys	Arg	Val	Pro	Glu	Leu	Gly	Glu	Pro	Gly
				185					190		
Leu	Thr	Glu	Cys	Thr	Tyr	Gln	Val	Ser	Asp	Ala	Asp
		195					200				
Gly	Arg	Ile	Ser	Thr	Glu	Phe	Met	Thr	Phr	Arg	Ile
205					210					215	

CAD2

FIG. 2A

CAD3

— 2 —

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Gln	Tyr	Thr	Val	Arg	Leu	Glu	Ser	Val	Asp	Pro	Pro	
		435					440					
Gly	Ala	Ala	Glu	Ala	Phe	Tyr	Ile	Ala	Pro	Glu	Val	
445					450					455		
Gly	Tyr	Gln	Arg	Gln	Thr	Phe	Ile	Met	Gly	Thr	Leu	
		460						465				
Asn	His	Ser	Met	Leu	Asp	Tyr	Glu	Val	Pro	Glu	Phe	
	470					475					480	
Gln	Ser	Ile	Thr	Ile	Arg	Val	Val	Ala	Thr	Asp	Asn	
			485				CAD5		490			
Asn	Asp	Thr	Arg	His	Val	Gly	Val	Ala	Leu	Val	His	
		495					500					
Ile	Asp	Leu	Ile	Asn	Trp	Asn	Asp	Glu	Gln	Pro	Ile	
505					510					515		
Phe	Glu	His	Ala	Val	Gln	Thr	Val	Thr	Phe	Asp	Glu	
			520					525				
Thr	Glu	Gly	Glu	Gly	Phe	Phe	Val	Ala	Lys	Ala	Val	
	530					535					540	
Ala	His	Asp	Arg	Asp	Ile	Gly	Asp	Val	Val	Glu	His	
				545					550			
Thr	Leu	Leu	Gly	Asn	Ala	Val	Asn	Phe	Leu	Thr	Ile	
		555					560					
Asp	Lys	Leu	Thr	Gly	Asp	Ile	Arg	Val	Ser	Ala	Asn	
565					570					575		
Asp	Ser	Phe	Asn	Tyr	His	Arg	Glu	Ser	Glu	Leu	Phe	
			580					585				
Val	Gln	Val	Arg	Ala	Thr	Asp	Thr	Leu	Gly	Glu	Pro	
	590					595					600	
Phe	His	Thr	Ala	Thr	Ser	Gln	Leu	Val	Ile	Arg	Leu	
			605						610		CAD6	
Asn	Asp	Ile	Asn	Asn	Thr	Pro	Pro	Thr	Leu	Arg	Leu	
→		615					620					
Pro	Arg	Gly	Ser	Pro	Gln	Val	Glu	Glu	Asn	Val	Pro	
625					630					635		
Asp	Gly	His	Val	Ile	Thr	Gln	Glu	Leu	Arg	Ala	Thr	
			640					645				

FIG. 2C

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Asp	Pro	Asp	Thr	Thr	Ala	Asp	Leu	Arg	Phe	Glu	Ile
	650					655					660
Asn	Trp	Asp	Thr	Ser	Phe	Ala	Thr	Lys	Gln	Gly	Arg
				665						670	
Gln	Ala	Asn	Pro	Asp	Glu	Phe	Arg	Asn	Cys	Val	Glu
		675					680				
Ile	Glu	Thr	Ile	Phe	Pro	Glu	Ile	Asn	Asn	Arg	Gly
685					690					695	
Leu	Ala	Ile	Gly	Arg	Val	Val	Ala	Arg	Glu	Ile	Arg
			700					705			
His	Asn	Val	Thr	Ile	Asp	Tyr	Glu	Glu	Phe	Glu	Val
	710					715					720
Leu	Ser	Leu	Thr	Val	Arg	Val	Arg	Asp	Leu	Asn	Thr
				725					730		
Val	Tyr	Gly	Asp	Asp	Tyr	Asp	Glu	Ser	Met	Leu	Thr
		735					740				
Ile	Thr	Ile	Ile	Asp	Met	Asn	Asp	Asn	Ala	Pro	Val
745					750					755	CAD7
Trp	Val	Glu	Gly	Thr	Leu	Glu	Gln	Asn	Phe	Arg	Val
→			760					765			
Arg	Glu	Met	Ser	Ala	Gly	Gly	Leu	Val	Val	Gly	Ser
	770					775					780
Val	Arg	Ala	Asp	Asp	Ile	Asp	Gly	Pro	Leu	Tyr	Asn
				785					790		
Gln	Val	Arg	Tyr	Thr	Ile	Phe	Pro	Arg	Glu	Asp	Thr
		795					800				
Asp	Lys	Asp	Leu	Ile	Met	Ile	Asp	Phe	Leu	Thr	Gly
805					810					815	
Gln	Ile	Ser	Val	Asn	Thr	Ser	Gly	Ala	Ile	Asp	Ala
			820					825			
Asp	Thr	Pro	Pro	Arg	Phe	His	Leu	Tyr	Tyr	Thr	Val
	830					835					840
Val	Ala	Ser	Asp	Arg	Cys	Ser	Thr	Glu	Asp	Pro	Ala
				845					850		
Asp	Cys	Pro	Pro	Asp	Pro	Thr	Tyr	Trp	Glu	Thr	Glu
		855					860				

FIG. 2D

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Gly	Asn	Ile	Thr	Ile	His	Ile	Thr	Asp	Thr	Asn	Asn
865					870					875	
					CAD8→						
Lys	Val	Pro	Gln	Ala	Glu	Thr	Thr	Lys	Phe	Asp	Thr
			880					885			
Val	Val	Tyr	Ile	Tyr	Glu	Asn	Ala	Thr	His	Leu	Asp
890						895					900
Glu	Val	Val	Thr	Leu	Ile	Ala	Ser	Asp	Leu	Asp	Arg
			905						910		
Asp	Glu	Ile	Tyr	His	Thr	Val	Ser	Tyr	Val	Ile	Asn
		915					920				
Tyr	Ala	Val	Asn	Pro	Arg	Leu	Met	Asn	Phe	Phe	Ser
925					930					935	
Val	Asn	Arg	Glu	Thr	Gly	Leu	Val	Tyr	Val	Asp	Tyr
			940					945			
Glu	Thr	Gln	Gly	Ser	Gly	Glu	Val	Leu	Asp	Arg	Asp
950						955					960
Gly	Asp	Glu	Pro	Thr	His	Arg	Ile	Phe	Phe	Asn	Leu
				965					970		
Ile	Asp	Asn	Phe	Met	Gly	Glu	Gly	Glu	Gly	Asn	Arg
		975					980				
Asn	Gln	Asn	Asp	Thr	Glu	Val	Leu	Val	Ile	Leu	Leu
985					990					995	
								CAD9→			
Asp	Val	Asn	Asp	Asn	Ala	Pro	Glu	Leu	Pro	Pro	Pro
			1000					1005			
Ser	Glu	Leu	Ser	Trp	Thr	Ile	Ser	Glu	Asn	Leu	Lys
1010						1015					1020
Gln	Gly	Val	Arg	Leu	Glu	Pro	His	Ile	Phe	Ala	Pro
				1025					1030		
Asp	Arg	Asp	Glu	Pro	Asp	Thr	Asp	Asn	Ser	Arg	Val
		1035					1040				
Gly	Tyr	Glu	Ile	Leu	Asn	Leu	Ser	Thr	Glu	Arg	Asp
1045					1050					1055	
Ile	Glu	Val	Pro	Glu	Leu	Phe	Val	Met	Ile	Gln	Ile
			1060					1065			
Ala	Asn	Val	Thr	Gly	Glu	Leu	Glu	Thr	Ala	Met	Asp
1070						1075					1080

FIG. 2E

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Leu	Lys	Gly	Tyr	Trp	Gly	Thr	Tyr	Ala	Ile	His	Ile		
				1085							1090		
Arg	Ala	Phe	Asp	His	Gly	Ile	Pro	Gln	Met	Ser	Met		
		1095					1100						
Asn	Glu	Thr	Tyr	Glu	Leu	Ile	Ile	His	Pro	Phe	Asn		
1105					1110	CAD10→					1115		
Tyr	Tyr	Ala	Pro	Glu	Phe	Val	Phe	Pro	Thr	Asn	Asp		
			1120					1125					
Ala	Val	Ile	Arg	Leu	Ala	Arg	Glu	Arg	Ala	Val	Ile		
	1130					1135					1140		
Asn	Gly	Val	Leu	Ala	Thr	Val	Asn	Gly	Glu	Phe	Leu		
			1145					1150					
Glu	Arg	Ile	Ser	Ala	Thr	Asp	Pro	Asp	Gly	Leu	His		
	1155					1160							
Ala	Gly	Val	Val	Thr	Phe	Gln	Val	Val	Gly	Asp	Glu		
1165				1170					1175				
Glu	Ser	Gln	Arg	Tyr	Phe	Gln	Val	Val	Asn	Asp	Gly		
		1180					1185						
Glu	Asn	Leu	Gly	Ser	Leu	Arg	Leu	Leu	Gln	Ala	Val		
	1190					1195					1200		
Pro	Glu	Glu	Ile	Arg	Glu	Phe	Arg	Ile	Thr	Ile	Arg		
			1205					1210					
Ala	Thr	Asp	Gln	Gly	Thr	Asp	Pro	Gly	Pro	Leu	Ser		
	1215					1220							
Thr	Asp	Met	Thr	Phe	Arg	Val	Val	Phe	Val	Pro	Thr		
1225				1230	CAD11→					1235			
Gln	Gly	Glu	Pro	Arg	Phe	Ala	Ser	Ser	Glu	His	Ala		
			1240				1245						
Val	Ala	Phe	Ile	Glu	Lys	Ser	Ala	Gly	Met	Glu	Glu		
	1250					1255					1260		
Ser	His	Gln	Leu	Pro	Leu	Ala	Gln	Asp	Ile	Lys	Asn		
			1265					1270					
His	Leu	Cys	Glu	Asp	Asp	Cys	His	Ser	Ile	Tyr	Tyr		
	1275					1280							
Arg	Ile	Ile	Asp	Gly	Asn	Ser	Glu	Gly	His	Phe	Gly		
1285				1290						1295			

FIG. 2F

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Leu	Asp	Pro	Val	Arg	Asn	Arg	Leu	Phe	Leu	Lys	Lys	
			1300					1305				
Glu	Leu	Ile	Arg	Glu	Gln	Ser	Ala	Ser	His	Thr	Leu	
	1310					1315					1320	
Gln	Val	Ala	Ala	Ser	Asn	Ser	Pro	Asp	Gly	Gly	Ile	
			1325					1330				
Pro	Leu	Pro	Ala	Ser	Ile	Leu	Thr	Val	Thr	Val	Thr	
	1335						1340					
Val	Arg	Glu	Ala	Asp	Pro	Arg	Pro	Val	Phe	Val	Arg	
1345					1350					1355		
Glu	Leu	Tyr	Thr	Ala	Gly	Ile	Ser	Thr	Ala	Asp	Ser	
			1360					1365				
Ile	Gly	Arg	Glu	Leu	Leu	Arg	Leu	His	Ala	Thr	Gln	
	1370					1375					1380	
Ser	Glu	Gly	Ser	Ala	Ile	Thr	Tyr	Ala	Ile	Asp	Tyr	
			1385					1390				
Asp	Thr	Met	Val	Val	Asp	Pro	Ser	Leu	Glu	Ala	Val	
	1395					1400						
Arg	Gln	Ser	Ala	Phe	Val	Leu	Asn	Ala	Gln	Thr	Gly	
1405					1410					1415		
Val	Leu	Thr	Leu	Asn	Ile	Gln	Pro	Thr	Ala	Thr	Met	
			1420					1425				
His	Gly	Leu	Phe	Lys	Phe	Glu	Val	Thr	Ala	Thr	Asp	
	1430					1435					1440	
Thr	Ala	Gly	Ala	Gln	Asp	Arg	Thr	Asp	Val	Thr	Val	
			1445					1450				
Tyr	Val	Val	Ser	Ser	Gln	Asn	Arg	Val	Tyr	Phe	Val	
	1455					1460						
Phe	Val	Asn	Thr	Leu	Gln	Gln	Val	Glu	Asp	Asn	Arg	
1465					1470					1475		
Asp	Phe	Ile	Ala	Asp	Thr	Phe	Ser	Ala	Gly	Phe	Asn	
			1480					1485				
Met	Thr	Cys	Asn	Ile	Asp	Gln	Val	Val	Pro	Ala	Asn	
	1490					1495					1500	
Asp	Pro	Val	Thr	Gly	Val	Ala	Leu	Glu	His	Ser	Thr	
			1505					1510				

FIG. 2G

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Gln	Met	Arg	Gly	His	Phe	Ile	Arg	Asp	Asn	Val	Pro	
		1515					1520					
Val	Leu	Ala	Asp	Glu	Ile	Glu	Gln	Ile	Arg	Ser	Asp	
1525					1530					1535		
Leu	Val	Leu	Leu	Ser	Ler	Ile	Gln	Thr	Thr	Leu	Ala	
		1540					1545					
Ala	Arg	Ser	Leu	Val	Leu	Gln	Asp	Leu	Leu	Thr	Asn	
1550						1555					1560	
Ser	Ser	Pro	Asp	Ser	Ala	Pro	Asp	Ser	Ser	Leu	Thr	
			1565							1570		
Val	Thr	Val	Leu	Ala	Ser	Leu	Ser	Ala	Val	Leu	Gly	
		1575					1580					
Phe	Met	Cys	Leu	Val	Leu	Leu	Leu	Thr	Phe	Ile	Ile	
1585					1590					1595		
Arg	Thr	Arg	Ala	Leu	Asn	Arg	Arg	Leu	Glu	Ala	Leu	
			1600						1605			
Ser	Met	Thr	Lys	Tyr	Gly	Ser	Leu	Asp	Ser	Gly	Leu	
1610						1615					1620	
Asn	Arg	Ala	Gly	Ile	Ala	Ala	Pro	Gly	Thr	Asn	Lys	
			1625							1630		
His	Thr	Val	Glu	Gly	Ser	Asn	Pro	Ile	Phe	Asn	Glu	
		1635					1640					
Ala	Ile	Lys	Thr	Pro	Asp	Leu	Asp	Ala	Ile	Ser	Glu	
1645					1650					1655		
Gly	Ser	Asn	Asp	Ser	Asp	Leu	Ile	Gly	Ile	Glu	Asp	
			1660						1665			
Leu	Pro	His	Phe	Gly	Asn	Val	Phe	Met	Asp	Pro	Glu	
1670						1675					1680	
Val	Asn	Glu	Lys	Ala	Asn	Gly	Tyr	Pro	Glu	Val	Ala	
			1685							1690		
Asn	His	Asn	Asn	Asn	Phe	Ala	Phe	Asn	Pro	Thr	Pro	
		1695					1700					
Phe	Ser	Pro	Glu	Phe	Val	Asn	Gly	Gln	Phe	Arg	Lys	
1705					1710					1715		

Ile

FIG. 2H